CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 85-22

NPDES NO. CA0005789

WASTE DISCHARGE REQUIREMENTS FOR:

SHELL OIL COMPANY
MARTINEZ MANUFACTURING COMPLEX
CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereafter called the Board) finds that:

1. Shell Oil Company (hereafter called the discharger) submitted an NPDES Permit Application dated February 3, 1981 and amended it by letters dated May 28, 1981, June 16, 1981, June 29, 1981, January 17, 1984, and January 10, 1985 for reissuance of NPDES Permit No. CA0005789.

2. The discharge of wastewater from the facilities is currently governed by Waste Discharge Requirements, Board Order No. 79-154.

3. The discharger operates a petroleum refinery with a crude-run throughput of 107,400 barrels per day. It manufactures hydrocarbon fuels, lubricants and asphalt and is classified as a lube refinery as defined by the U.S. Environmental Protection Agency in 40 CFR 419.40. Treated process wastewater, stormwater runoff, and other wastes as described below are discharged into Carquinez Strait, a water of the United States.

4. The report of waste discharge and recent self-monitoring reports describe the discharges as follows:

   (a) Waste 001 averages 3.2 million gallons per day (mgd) and consists process wastes, cooling tower blowdown, boiler blowdown, ballast water, sanitary wastes, and stormwater runoff. The treated wastes are discharged into Carquinez Strait via a 24-inch outfall with diffuser ports at a depth of 20 feet under the Martinez Complex Wharf. The actual discharge is intermittent, as the rate is automatically controlled by tidal velocity and final holding pond water level. Waste 001 may be discharged on an emergency basis to a tidal channel which flows across a marsh to Carquinez Strait. The discharge is permitted only to prevent severe damage to treatment facilities.

   (b) Stormwater runoff from non-process area, and runoff after the first hour of each rainstorm from the light oil processing area, is treated by gravity oil separators and discharged as described below at points tributary to Carquinez Strait via drainage courses and an unnamed slough:

1. Waste 002 is drainage from storage tank areas and post-initial runoff from the light oil processing area and is discharged into a drainage course at a point 1000-feet east-southeast from the intersection of Shell Avenue and Waterfront Road.

2. Waste 003 is drainage from areas near the discharger's Crude Oil Reservoir No. 3, and is discharged into a drainage course at a point near the northeast corner of the Trumbull Asphalt Plant.

3. Waste 004 is drainage from the Vine Hill storage tank farm and is discharged into a drainage course at a point about 2000-feet south from the Mountain View Sanitary District's sewage treatment plant.

4. Waste 005 is drainage from the flare area and adjacent pipe road, and is discharged into a drainage course at a point about 1500-feet south from the Mountain View Sanitary District's sewage treatment plant.

5. Waste 007 is drainage from the butane/propane storage area and adjacent pipe road, and is discharged into a drainage course at a point about 3000-feet west from the Mountain View Sanitary District's sewage treatment plant.

5. The Board adopted a revised Water Quality Control Plan, San Francisco Bay Basin (Basin Plan) on July 21, 1982, and the State Water Resources Control Board approved it on October 16, 1982. The provisions of this permit are consistent with the objectives of the Basin Plan.

6. The discharger's self-monitoring reports and other studies indicate process wastewater (Waste 001) has exhibited acute toxicity. The effluent may therefore contain conservative toxicants which are being discharged to Carquinez Strait.

7. The beneficial uses of Carquinez Strait and contiguous water bodies are:

   a. Water contact recreation
   b. Non-contact water recreation
   c. Navigation
   d. Open commercial and sport fishing
   e. Wildlife habitat
   f. Estuarine habitat
   g. Fish spawning and migration
   h. Industrial uses
   i. Preservation of rare and endangered species
   j. Shellfishing

8. The Basin Plan includes the following prohibition:

   "...It shall be prohibited to discharge:

   All conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin."

9. Effluent limitation and toxic effluent standards established pursuant to Sections 208(b), 301, 304, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.

10. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21110) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

11. Effluent limitation guidelines requiring the application of best available technology economically achievable (BAT) have been promulgated by the U.S. Environmental Protection Agency for the Petroleum Refining Point Source Category 40 CFR Part 419 on October 18, 1982. Effluent limitations of this Order are based on these guidelines, the Basin Plan, State Plans and Policies, current plant performance, and best engineering judgement. The limitations are considered to be those attainable by BAT in the judgement of the Board.

12. Under 40 CFR 122.44, "Establishing Limitations, Standards, and Other Permit Conditions," NPDES permits should also include toxic pollutant limitations if the discharger uses or manufactures a toxic pollutant as an intermediate or final product or byproduct. This permit may be modified prior to the expiration date to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as a part of this Order.

13. This Order contains effluent limits based on recent production rates at this facility. The Board is aware that production can vary and commits to expediting reissuance of a new permit upon receipt of an application with new production data.

14. The Board has notified the discharger and interested agencies and persons of its intent to reissue waste discharge requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

15. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Water Pollution Control Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Effluent Limitations

1. The discharge of Waste 001 containing constituents in excess of the following limits is prohibited:

Constituent	Units	30-day Average	Maximum Daily
BOD (5-day @ 20°C)	lbs/day	1700	3350
	kg/day	774	1520
TSS	lbs/day	1500	2340
	kg/day	680	1060
COD	lbs/day	12300	23700
	kg/day	5610	10800
Oil and Grease	lbs/day	561	1070
	kg/day	255	485
	mg/l	10	20
Phenolic Compounds	lbs/day	7.85	24.9
	kg/day	3.56	11.3
Ammonia as N	lbs/day	711	1550
	kg/day	323	706
Sulfide	lbs/day	9.91	22.1
	kg/day	4.51	10.0
Total Chromium	lbs/day	9.14	26.2
	kg/day	4.15	11.9
Hexavalent Chromium	lbs/day	0.75	1.68
	kg/day	0.34	0.76
Total Zinc**	lbs/day	-	37.5
	kg/day	-	17.0
Settleable Solids	ml/l-hr	0.1	0.2
Soluble BOD (5-day @ 20°C)	mg/l	*	*

* The Board will consider inclusion of limitations for Soluble BOD (defined as non-filterable) based on 18 months of performance data to be obtained as a part of the attached self-monitoring program.

** Incremental increase over intake water.

2. In addition to the 30-day average and daily maximum pollutant weight allowances shown in A.1, allocations for pollutants attributable to stormwater runoff and ballast water discharged as a part of Waste 001 are permitted in accordance with the following schedules:

STORMWATER RUNOFF

Constituent	Units	30-Day Average	Maximum Daily
BOD (5-day @ 20°C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	180	360
Oil and Grease	mg/l	8	15
Phenolic Compounds	mg/l	0.17	0.35
Total Chromium	mg/l	0.21	0.60
Hexavalent Chromium	mg/l	0.028	0.062

BALLAST WATER

Constituent	Units	30-Day Average	Maximum Daily
BOD (5-day @ 20°C)	mg/l	26	48
TSS	mg/l	21	33
COD	mg/l	240	470
Oil and Grease	mg/l	8	15
pH	Within the range of 6.0 to 9.0		

The total effluent limitation for the discharge is the sum of the stormwater runoff allocation, the ballast water allocation and the mass limits contained in A.1. The total effluent limitation (both maximum and average) is to be computed by the discharger on a monthly basis as shown in Part B of the Monitoring Program.

3. Waste 001 shall not have a pH less than 6.0 nor greater than 9.0.

4. Waste 001 shall not have a chlorine residual in excess of 0.0 mg/l.

5. In representative samples of the effluent, the discharge of Waste 001 shall meet the following limit of quality:

TOXICITY:

a. Until compliance is achieved with the final toxicity limitations pursuant to the schedule specified in Provision No. 13, the LC-50 of the effluent shall not be less than a value of 50.

b. Pursuant to the compliance time schedule specified in Provision No. 13, the LC-50 of threespine stickleback (Gasterosteus aculeatus) test fishes in 96 hour bioassays shall achieve a 90 percentile value of not less than 100 based on any ten consecutive samples.

6. The discharge of Wastes 002, 003, 004, and 005 containing constituents in excess of the following limits is prohibited:

Constituent	Units	Maximum Daily
Oil and Grease	mg/l	15
TOC	mg/l	110
pH	pH units	6.5-8.5
Visible oil	observation	none
Visible color	observation	none

7. Total coliform bacteria for a median of 5 consecutive samples of Waste 001 shall not exceed 240 MPN/100 ml. Any single sample shall not exceed 10,000 MPN/100 ml when verified by a repeat sample taken within 48 hours.

B. Receiving Water Limitations

1. The discharge of wastes shall not cause the following conditions to exist in waters of the State at any place at levels that cause nuisance or adversely affect beneficial uses:

a. Floating, suspended, or deposited macroscopic particulate matter or foam;

b. Bottom deposits or aquatic growths;

c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

a.	Dissolved oxygen:	7.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation.
b.	Dissolved sulfide:	0.1 mg/l maximum.
c.	pH:	The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.
d.	Un-ionized ammonia (as N):	0.025 mg/l Annual Median, 0.4 mg/l Maximum at any time.

3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Water Pollution Control Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Water Pollution Control Act or amendments therto, the Board will revise and modify this Order in accordance with such more stringent standards.

C. Provisions

1. Waste 001 shall receive an initial dilution of at least 10:1.

2. Discharge of Waste 001 through the alternate discharge point to the tidal channel which flows across the marsh to Carquinez Strait shall occur only when the discharge is necessary to prevent severe damage to treatment facilities or a more adverse effect on the receiving waters. The Board shall be notified prior to each use of the alternate discharge point.

3. In the event of repeated noncompliance with Effluent Limitation A.5 - Toxicity, the discharger may be required to submit to the Board a technical report, identifying the conservative and non-conservative toxicants in the process waste effluent and the extent to which each toxicant contributes to the total toxicity.

4. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Water Pollution Control Act, or amendments thereto, and shall take effect at the end of ten days from date of hearing provided the Regional Administrator, U.S. Environmental Protection Agency, has no objections.

5. This permit shall be modified or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(c), and (d), 303, 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

   (a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or,

   (b) Controls any pollutant not limited in the permit.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Act then applicable.

6. The discharger shall comply with the self-monitoring program as adopted by the Board and as may be amended by the Board.

7. This permit may be modified prior to the expiration date to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as a part of this Order.

8. All applications, reports, or information submitted to the Board shall be signed and certified pursuant to Environmental Protection Agency regulations 40CFR122.41(k).

9. Pursuant to Environmental Protection Agency regulations [40CFR122.42(a)] the discharger must notify the Board as soon as it knows or has reason to believe (1) that they have begun or expect to begin, use or manufacture a pollutant not reported in the permit application, or (2) a discharge of a toxic pollutant not limited by this permit has occurred, or will occur, in concentrations that exceed the specified limits included in 40CFR122.42(a).

10. Order Nos. 79-154 and 80-45 are hereby rescinded.

11. This Order includes all items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated April 1977 except A.5, A.12, B.2, and B.5.

12. This Order expires on February 20, 1990 and the discharger must file a Report of Waste Discharge in accordance with Title 23, California Administrative Code, not later than 180 days in advance of such date as application for issuance of new waste discharge requirements.

13. The discharger shall comply with the limitations and other provisions of this Order upon its adoption by the Board except as noted below.

14. The discharger shall comply with Effluent Limitations A.5b. in accordance with the following time schedule:

Task	Deadline
Determinesources of effluent toxicity and submitconceptual plan forcompliance and, if desired, application for exception to toxicity limitation:	August 20, 1985
Achieve full compliance:	August 20, 1986

The Board will act on any complete application of exception to the toxicity limitation no later than 120 days of its submittal in final form.

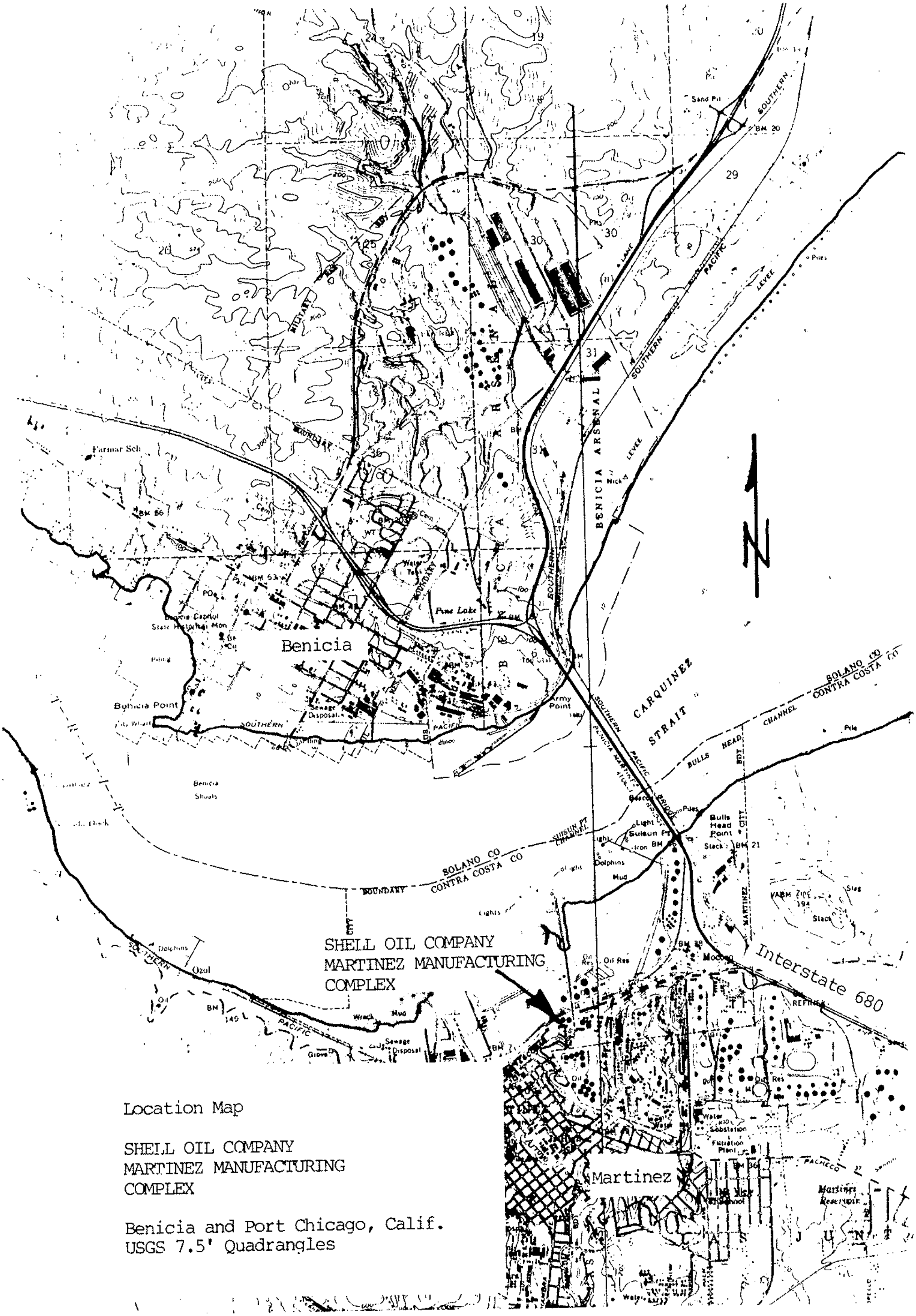
15. The discharger shall comply with Effluent Limitation A.1, Oil and Grease, 30-day average of 10 mg/l, in accordance with the following time schedule:

Task	Deadline
Determine sources of oil and grease and submit conceptual plan for compliance:	August 20, 1985
Achieve full compliance:	August 20, 1986

I, Roger B. James, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 20, 1985.

ROGER B. JAMES
Executive Officer

Attachments:
Location Map
Standard Provisions, Reporting
Requirements and Definitions dated April 1977
Self-Monitoring Program



Location Map

SHELL OIL COMPANY
MARTINEZ MANUFACTURING
COMPLEX

Benicia and Port Chicago, Calif.
USGS 7.5' Quadrangles

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

SHELL OIL COMPANY

MARTINEZ MANUFACTURING COMPLEX

CONTRA COSTA COUNTY

NPDES NO. CA0005789

ORDER NO. 85-22

CONSISTS OF

PART A, dated 1/78

AND

PART B

PART B

Shell Oil Company

I. DESCRIPTION OF SAMPLING STATIONS

A. EFFLUENT

Station	Description
E-001	At a point in the outfall from the Waste 001 treatment facilities to the discharge point, at which all waste tributary to thereto is present.
E-001-D	At any point downstream from the disinfection facilities for the refinery sanitary sewage, at which all such sewage is present and adequate disinfection is assured.
E-002	At the point of discharge from the retention pond(s) for Waste 002.
E-003	At the point of discharge from the retention pond(s) for Waste 003.
E-004	At any point in the outfall from the treatment facilities for Waste 004.
E-005	At any point in the outfall from the treatment facilities for Waste 005.
E-006	At the point of discharge from the retention pond(s) to the tidal channel which flows to Carquinez Strait.
E-007	At the point of discharge of Waste 007 to the drainage course about 3000-feet west of the MVSD sewage treatment plant.

B. RECEIVING WATERS

Station	Description
C-0	Located over the center of the diffuser.
C-1	At the north face of the wharf, 75-feet NW from diffuser.

C-2	At the inshore side of the north apron of the diffuser.
C-3	At the south face of the wharf, 75 feet NE from the diffuser.
C-4	At the north face of the wharf, at the westerly end of Berth NO. 1.
C-5	At the center of the wharf, at the westerly end of Berth NO. 1.
C-6	At the south face of the wharf, at the westerly end of Berth NO. 1.

Station	Description
C-R1	At a point, in Carquinez Strait, located at the upstream (northeasterly) end of Shell Oil Company wharf.
C-R2	At a point, in Carquinez Strait, located at the downstream (southwesterly) end of Shell Oil Company wharf.

II. MISCELLANEOUS REPORTING

A. The discharger shall record the rainfall on each day of the month.

B. The method used to determine stormwater runoff allocations will be evaluated during the 1984-85 wet weather period. The discharger will be allowed to continue using its present method until a more suitable method is developed by Board staff. A description of the method presently used by the discharger shall be included in its self-monitoring reports. The daily maximum allocation must be computed for each day Waste 001 is monitored.

C. The discharger shall retain the following information concerning the monitoring program for organic and metallic pollutants.

a. description of sampling stations, times, and procedures

b. description of sample containers, storage, and holding time prior to analysis

c. quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal and surrogate standards

The discharger shall submit in the monthly self-monitoring report the test results together with the detection limits (including unidentified peaks)

When at least one year of monitoring results have been submitted, they will be evaluated for the need to reduce or expand the monitoring program for organic and metallic pollutants relative to the parameters and sampling frequencies.

D. Ballast water treated and discharged as part of Waste 001 shall be metered and the volume recorded for each calender day. The 30-day average shall be the sum of the daily values in a calender month divided by the number of days in that month. Ballast-water allocations shall be calculated by multiplying the volume of ballast water, determined above, by the appropriate concentration listed under Effluent Limitation A.2. in the permit.

III. SCHEDULE OF SAMPLING AND ANALYSIS

A. The schedule of sampling and analysis shall be that given in Table I (attached).

IV. MODIFICATIONS TO PART A

Exclusion Paragraphs: E.4.

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliancer with waste discharge requirements established in Regional Board Order No. 85-22.

2. Is effective on the date shown below.

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revision will be ordered by the Executive Officer.

ROGER B. JAMES
Executive Officer

Effective Date February 28, 1985

Attachments: Table 1

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	E-001 and E-006 (8)				E001 D	E-002 thru 005		All C	E-007				
TYPE OF SAMPLE	Cont	C-24	G		G	G		G					
Flow Rate (mgd)	Cont												
BOD, 5-day, 20°C, & COD (mg/l & kg/day)	W												
Chlorine Residual & Dosage (mg/l & kg/day)			W										
Settleable Matter (ml/l-hr. & cu. ft./day)			W										
Total Suspended Matter (mg/l & kg/day)		W											
Oil and Grease (mg/l & kg/day)			W(1)			E (10)			E(10)				
Coliform (Total or Fecal) (MPN/100 ml) per req't					2/W								
Fish Toxicity	(3) W												
Ammonia Nitrogen (mg/l & kg/day)		W											
pH (units)	(2) Cont					E (10)		M	E(10)				
Dissolved Oxygen (mg/l and % Saturation)								M					
Temperature (°C)	Cont							M					
Sulfides Total (mg/l)			W										
Sulfides (if DO<5.0 mg/l) Total & Dissolved (mg/l)								M(4)					
Arsenic (mg/l & kg/day)		2M											
Cadmium (mg/l & kg/day)		2M											
Chromium, Total (mg/l & kg/day)		W											
Copper (mg/l & kg/day)		M											
Cyanide (mg/l & kg/day)		M											
Silver (mg/l & kg/day)		2M											
Lead (mg/l & kg/day)		M											

TABLE 1 (continued)

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	E-001 and E-006 (8)			E-002 thru 005		All C	E-007						
TYPE OF SAMPLE	C-24	G		G		G							
Mercury (mg/l & kg/day)	2M												
Nickel (mg/l & kg/day)	M												
Vanadium (mg/l + kg/day)	M												
Zinc (mg/l & kg/day)	M												
Phenolic Compounds (mg/l & kg/day)	W												
All Applicable Standard Observations				(10) E			E (10)						
Soluble BOD (mg/l)	W (9)												
Total Ident. Chlor. Hydrocarbons (mg/l & kg/day)													
Total Organic Carbon (TOC)				(10) E			E (10)						
Hexavalent Chromium	W												
Unionized Ammonia (as N)						M							
Selenium	2M												
Volatile Organics (5)	2M (7)												
Acid Base/Neutral Organics (6)	2M (7)												

LEGEND FOR TABLE 1

TYPES OF SAMPLES

G = grab sample
C-24 = composite sample - 24-hour
Cont = continuous sampling
O = observation

TYPES OF STATIONS

I = intake stations
E = waste effluent stations
C = receiving water stations
B = bottom sediment stations

FREQUENCY OF SAMPLING

E = each occurence
D = once each day
W = once each week
2/W = 2 days per week
M = once each month
2M = every 2 months
Y = once each year
cont = continuous

FOOTNOTES FOR TABLE 1

(1) Oil and grease sampling shall consist of 3 grab samples taken at 2 hour intervals during the sampling day, with each grab being collected in a glass container. The entire volume of each sample shall be composited prior to analysis. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite wastewater sample for extraction and analysis.

(2) Daily minimum and maximum shall be reported.

(3) Static bioassays shall be utilized to determine compliance for the first eight months subsequent to adoption of this permit. The discharger shall complete construction of the flow-through bioassay such that concurrent (static and flow-through) bioassay tests shall be conducted during the last two months of the initial eight month period. Thereafter the discharger shall determine compliance utilizing flow-through bioassays. Immediately upon the death of over half the test fish, the LC-50 of the discharge shall be determined using at least 4 dilutions in a static bioassay.

(4) Receiving water analysis for sulfides should be run when dissolved oxygen is less than 5.0 mg/l.

(5) Volatile Organic Toxic Pollutants shall be analyzed using EPA Method 624 of the July, 1982, Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057. In addition, all other peaks appearing in the reconstructed ion chromatograph above the detection limit shall be quantified based on the nearest internal standard.

FOOTNOTES FOR TABLE 1 CONT.

(6) Acid and Base/Neutral Extractable Organic Toxic Pollutants shall be analyzed using EPA Method 625 of the July, 1982, Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057. In addition, the five most prominent peaks appearing in the reconstructed ion chromatograph above the detection limit shall be quantified based on the nearest internal standard.

(7) 24-hour composite samples shall be collected and shall consist of eight grab samples collected at three-hour intervals. The analytical laboratory shall remove flow-proportioned volumes from each sample vial or container for the analysis.

(8) Take samples of Waste 006 only during emergency periods when discharge of Waste 006 occurs.

(9) Soluble BOD is defined here as the 5-day, 20°C BOD of filtrate that passes through a standard glass fiber filter as described in Standard Methods for the Examination of Water and Wastewater, 15th Edition, Part 209 B., APHA, AWWA, WPCF, (1980).

(10) Stormwater-runoff sampling shall consist of a single grab sample during the first hour of runoff from the first storm of each calender month.